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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/589,511	08/15/2006	Shigenori Ozaki	295037US26PCT	8324

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EXAMINER	
DEO, DUY VU NGUYEN	
ART UNIT	PAPER NUMBER
1713	

NOTIFICATION DATE	DELIVERY MODE
06/15/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/589,511	OZAKI ET AL.	
	Examiner	Art Unit	
	Duy-Vu N. Deo	1713	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 March 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,5,10,11,13,16,21,23,24,29,41,42,48,55 and 56* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 2, 5, 10, 11, 13, 16, 21, 23, 24, 29, 41, 42, 48, 55, 56* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. Claims 1, 2, 5, 10, 11, 13, 16, 21, 23, 24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The limitation of "without setting the process chamber opened to the atmosphere after the process" is vague and indefinite. It is not clear what process is being addressed, the cleaning process or the process of supplying the cleaning gas into the chamber?

2. Claims 1, 13 recite the limitation "...after **the process**". There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 10, 11, 13, 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Entley et al. (US 6,872,323).

5. Entley describes a method for cleaning and removing W contaminant from chamber comprising the step of supplying cleaning gas consisting of O2, H2, and inactive gas and generating plasma to clean the chamber inside. The chamber must be exhausting while supplying the cleaning gas in order to maintain the pressure inside the

chamber and the chamber must be kept from exposed to the atmosphere after cleaning in order to keep a contaminant free chamber (col. 3, line 35-55; claims 1, 8). Unlike claimed invention, Entley doesn't describe the ratio of the H2 gas relative to the O2 set at 2 or more or at 4 or more (claims 10, 21). However, the gas ratio is a result effective variable as the amount of each gas is a result effective variable (please also see Jain cited below). Entley also shows this by describing the amount of the cleaning gas is chosen at a certain ranges (col. 6, lines 1-10; claims 6, 7). Therefore, one skilled in the art would find it obvious to determine the ratio of the cleaning gases through routine experimentation in order to provide optimum ratio to clean the chamber with predictable results.

6. Referring to claim 11, even though Entley is silent about heating the chamber by the plasma prior to cleaning, it would be obvious that the plasma would create heat and raise the chamber temperature before cleaning.

7. Claims 2, 29, 55, 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Entley as applied to claim 1 above, and further in view of admitted prior art.

8. Referring to claims 2, 15, 29 Entley doesn't describe the process on the substrate is an oxidation process. However, oxidation process is a well known step during the process of a semiconductor substrate having W-containing film and polysilicon film as describes in paragraphs 0002-0003. The known process includes the step of oxidizing the polysilicon film. Therefore, depending on the desired product, it would be obvious to

one skilled in the art that the cleaning method described by Entley can be part of any semiconductor manufacturing process and applied after the step such as claimed oxidation step and would still be able to clean the chamber with predictable results.

9. Referring to claim 29, it would be obvious that the cleaning step is to prepare for another plasma process in the chamber including another oxidation process of a second substrate.

10. Referring to claim 56, performing another same cleaning step would have been obvious to one skilled in the art in order to provide a clean chamber for the next process.

11. Claims 5, 16, 41, 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Entley or Entley/admitted prior art as applied to claims 1, 13, 29 above, and further in view of Sato et al. (US 5,861,601).

12. Referring to the limitations of generating the plasma by applying microwaves through a planar antenna having a plurality of slots, even though Entley doesn't describe such apparatus; However, this type of plasma generating apparatus has been known and used by one skilled in the art as shown here by Sato. He teaches a microwave plasma processing apparatus having quartz (dielectric material) sidewall and a planar antenna having a plurality of slots (col. 4, lines 15-36; col. 9, lines 5-10). It would have been obvious to one skilled in the art to clean any apparatus including

claimed microwave generating apparatus as long as it would able to create plasma to clean the chamber with predictable results.

13. Claims 23, 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Entley as applied to claim 13 above, and further in view of Jain et al. (US 6,613,682).

14. Referring to the limitations of having claimed chamber temperature, and pressure, even though Entley doesn't describe claimed ratios and chamber temperature and pressure ranges. However, they are result-effective variables and they are determined through routine experimentation as shown here by Jain (col. 6, lines 44-50; table II). One skilled in the art would find it obvious at the time of the invention was made to determine the optimum chamber temperature and pressure so that the chamber is cleaned with predictable results.

15. Claims 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chou San et al. (US 2004/0043626) and further in view of admitted prior art.

16. Chou San describes a method for cleaning a CVD reaction chamber comprising the step of supplying cleaning gas consisting of O2, and inactive gas and generating plasma to clean the chamber inside. The chamber must be exhausting while supplying the cleaning gas in order to maintain the pressure inside the chamber and the chamber must be kept from exposed to the atmosphere after cleaning in order to keep a

contaminant free chamber (abs.; paragraphs 0027, 0028, 0029). Unlike claimed invention, Chou San doesn't describe the method comprising the step of a plasma oxidation process on the substrate having W-containing film and polysilicon film to selectively oxidize the polysilicon film. However, oxidation process is a well known step during the process of a semiconductor substrate having W-containing film and polysilicon film as describes in paragraphs 0002-0003 of specification. The known process includes the step of oxidizing the polysilicon film. Therefore, depending on the desired product, it would be obvious to one skilled in the art that the cleaning method described by Chou San can be part of any semiconductor manufacturing process and applied after the step such as claimed oxidation step and would still be able to clean the chamber with predictable results.

Response to Arguments

17. Applicant's arguments with respect to claims 1, 2, 5, 10, 11, 13, 16, 21, 23, 24, 29, 41, 42, 48, 55, 56 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Duy-Vu N. Deo whose telephone number is 571-272-1462. The examiner can normally be reached on Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571-272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Duy-Vu N Deo/
Primary Examiner, Art Unit 1713

6/9/10